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IS 4802 (1988): Method for determination of colour fastness of textile materials to dry-cleaning [TXD 5: Chemical Methods of Test]

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*Indian Standard*

**METHOD FOR DETERMINATION OF COLOUR  
FASTNESS OF TEXTILE MATERIALS  
TO DRY-CLEANING**

*( First Revision )*

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NEW DELHI 110002

## *Indian Standard*

# METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO DRY-CLEANING

*( First Revision )*

## 0. FOREWORD

**0.1** This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 20 May 1988, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

**0.2** This standard was first published in 1968. It has been revised to align it with ISO 105/D-1982 'Textiles - Tests for colour fastness D01 Colour fastness to dry-cleaning', issued by the

International Organization for Standardization (ISO) and to incorporate changes in line with other standards on colour fastness tests.

**0.3** In India, different solvents are used for dry-cleaning of textiles though perchloroethylene is considered as ideal for many of the textiles. Determination of colour fastness of such textiles to dry-cleaning is of considerable importance to the consumer.

## 1. SCOPE

**1.1** This standard prescribes a method for determination of colour fastness of textile materials of all kinds and in all forms to dry-cleaning.

**1.2** The test prescribed in this standard is not suitable for evaluation of the durability of textile finishes, nor it is intended for use in evaluating the resistance of colours to spot and stains removal procedures used by the dry-cleaners (see Notes 1 and 2).

NOTE 1 — This test covers colour fastness to dry-cleaning only; commercial dry-cleaning practice normally involves other operations, such as water spotting, solvent spotting, steam pressing, etc, for which other standard test methods are available, if the full 'dry-cleanability' of the textile is to be assessed.

NOTE 2 — The presence of absorbed water in either the fabric or dry-cleaning solution, or the presence of a detergent water in the dry-cleaning solution, has not been found to be a critical factor in assessing colour fastness. This test gives results which correlate satisfactorily with those obtained in commercial dry-cleaning.

## 2. PRINCIPLE

**2.1** A specimen of the textile in contact with a cotton fabric bag together with non-corrodible steel discs is agitated in dry-cleaning solvent, then squeezed or centrifuged and dried in hot air. The change in colour of the specimen is assessed with the grey scale for change in colour. At the conclusion of the test, the discolouration of the solvent is also assessed by comparing the filtered solvent with unused solvent by transmitted light by means of grey scale for staining.

## 3. SAMPLING

**3.1** Sample to determine conformity of a lot of coloured textile material to a specification shall be selected so as to be representative of the lot.

**3.2** Sample drawn in compliance with the relevant material specification or as agreed to between the buyer and the seller to evaluate colour fastness of the material in the lot shall be held to be representative of the lot.

## 4. PREPARATION OF TEST SPECIMEN

**4.1** If the textile to be tested is fabric, draw a test specimen of  $10 \times 4$  cm size.

**4.2** If the material to be tested is yarn, knit or weave it into fabric and draw from it  $10 \times 4$  cm test specimen or make a wick of parallel lengths 10 cm long and about 0.5 cm in diameter, tied near both ends.

**4.3** If the textile to be tested is loose fibre, comb and compress enough of it to form a sheet  $10 \times 4$  cm.

## 5. APPARATUS

**5.1 Suitable Mechanical Device** — consisting of water bath containing a rotatable shaft which supports, radially, glass or stainless steel containers ( $75 \pm 5$  mm diameter  $\times 125 \pm 10$  mm high) approximately  $550 \pm 50$  ml capacity, the bottom of the containers being  $45 \pm 10$  mm high from the centre of the shaft. The shaft/container assembly is rotated at a speed of  $40 \pm 2$  min<sup>-1</sup>.

The temperature of the water bath is thermostatically controlled to maintain the test solvent at  $30 \pm 2^\circ\text{C}$ .

NOTE — Other mechanical devices may also be used, provided the results are identical to those obtained by the apparatus described above.

**5.2 Glass or Stainless Steel Containers** —  $75 \pm 5$  mm diameter,  $125 \pm 10$  mm high and of  $550 \pm 50$  ml capacity, which shall be closed using solvent resistant gaskets.

**5.3 Non-Corrodible (Stainless) Steel Discs** —  $30 \pm 2$  mm  $\times$   $3 \pm 0.5$  mm, smooth and free from rough edges of mass  $20 \pm 2$  g.

**5.4 Undyed Cotton 'Twill' Cloth** — of mass per unit area  $270 \pm 70$  g/m<sup>2</sup>, free from finishes and cut into samples  $12 \times 12$  cm.

**5.5 Grey Scales** — for evaluating change in colour and staining.

**5.6 Glass Tubes** — of diameter 25 mm.

## 6. REAGENTS

**6.1 Quality of Reagents** — Unless otherwise specified, pure chemicals shall be employed in tests and distilled water shall be used where the use of water as a reagent is intended.

NOTE — Pure chemicals shall mean chemicals that do not contain impurities which affect the test results.

**6.2 Perchloroethylene or Any Other Solvent Used for Dry-Cleaning**

NOTE — Perchloroethylene should be stored over anhydrous sodium carbonate to neutralize any hydrochloric acid formed.

## 7. PROCEDURE

**7.1** Prepare a bag with inside dimensions of  $10 \times 10$  cm using the undyed cotton twill cloth by sewing together two squares of this cloth around three sides. Place the specimen and 12

steel discs inside the bag. Close the bag by any convenient means.

**7.2** Place the bag containing the specimen and the steel discs in the container and add 200 ml of the dry-cleaning solvent at  $30 \pm 2^\circ\text{C}$ . Treat the specimen for 30 min at  $30 \pm 2^\circ\text{C}$  in the specified equipment (see 5.1).

**7.3** Remove the bag from the container, withdraw the specimen, place it between absorbent paper or cloth and squeeze or centrifuge to remove surplus solvent. Dry the specimen by hanging in air in shade at a temperature of  $60 \pm 5^\circ\text{C}$ .

**7.4** Evaluate the change in colour of the treated test specimen with the grey scale (see Notes under 7.5) (see IS : 768 - 1982\*).

**7.5** At the conclusion of the test, filter the solvent remaining in the container through filter paper. Compare the colour of the filtered solvent with that of unused solvent in the glass tube placed in front of white card using transmitted light by means of grey scale for assessing staining (see IS : 769 - 1982†).

NOTE 1 — The treated test specimens should have cooled after drying and regained their normal moisture content before evaluation.

NOTE 2 — In cases of doubt in the colour fastness ratings as assessed by an observer, the assessment should be done by at least three observers and the overall average rating should be reported.

## 8. REPORT

**8.1** Report the numerical rating for change in colour of the test specimen and the numerical ratings for staining of the solvent.

**8.2** Report the solvent used for the test.

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\*Method for evaluating change in colour (first revision).

†Method for evaluating staining (first revision).